

Workshop on:
High-Performance Numerical Libraries for
Science and Engineering:

Panel II: Promoting Interoperability

Panelists:

- Robert Clay
- Andrew Cleary
- Craig Rasmussen
- Matt Sottile

Moderator: Tony Drummond



Approach to interoperability

<http://acts.nersc.gov>

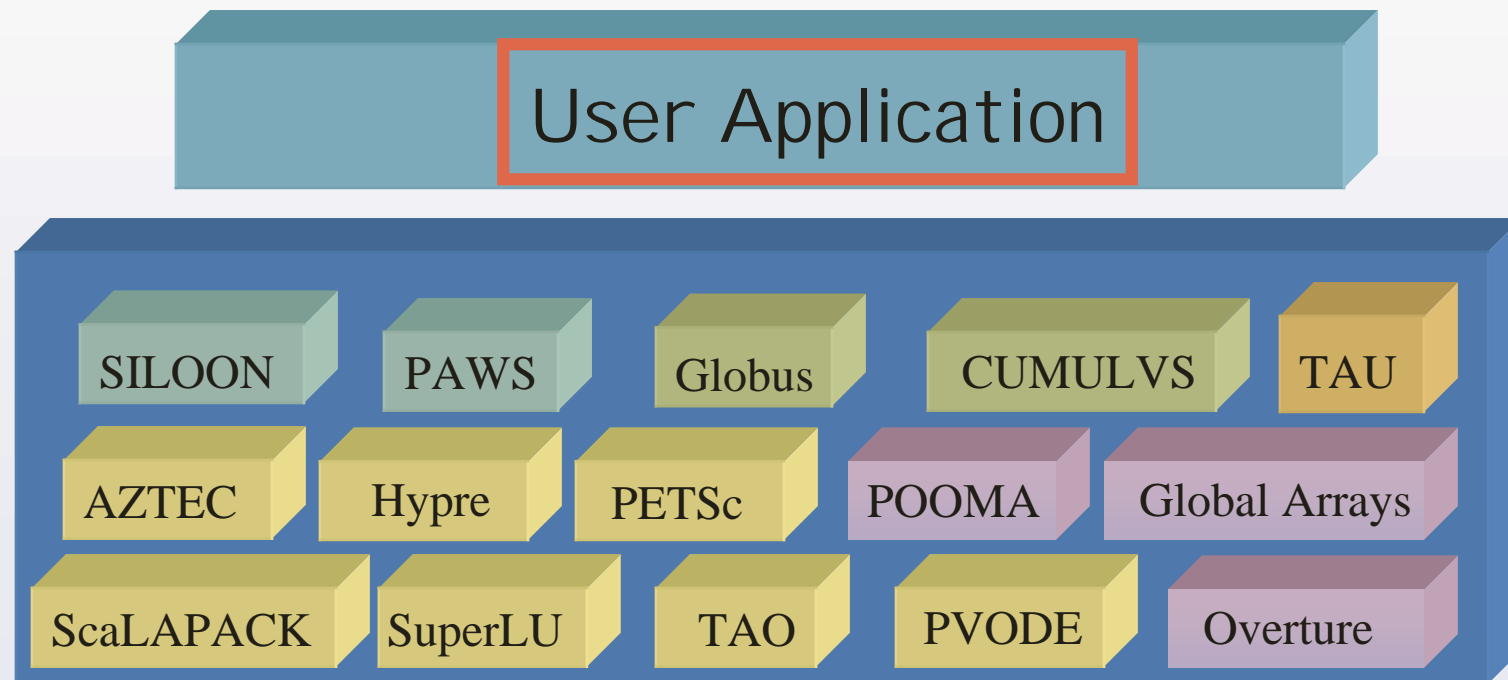


- Tool A "can call" Tool B (specific wrappers)
- Problem Solving Environments
 - NetSOLVE
- Commercial Packages
 - MATLAB
- Python + ACTS = PyACTS interface
- SILOON
- BABEL
- ESI - FEI
- CCA



Interoperable interface

<http://acts.nersc.gov>





Interoperable interface

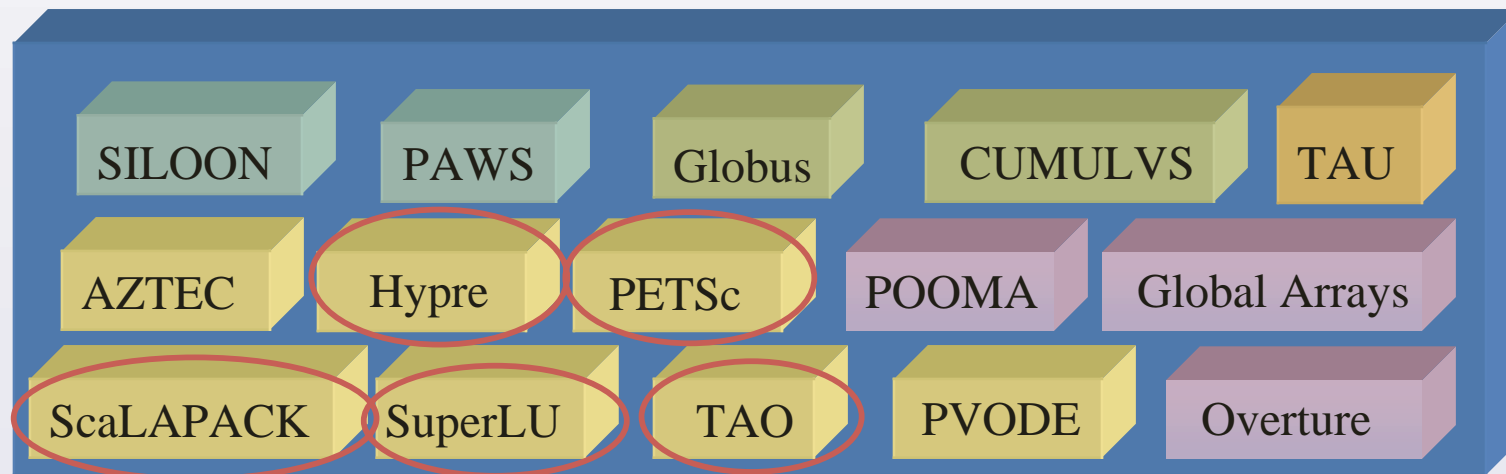
<http://acts.nersc.gov>

TOPS: Terascale Optimal PDE Simulations

Keyes et. al.,

ANL, LBNL, LLNL, ODU, UCB and UTK

User Application





PyACTS

<http://acts.nersc.gov>



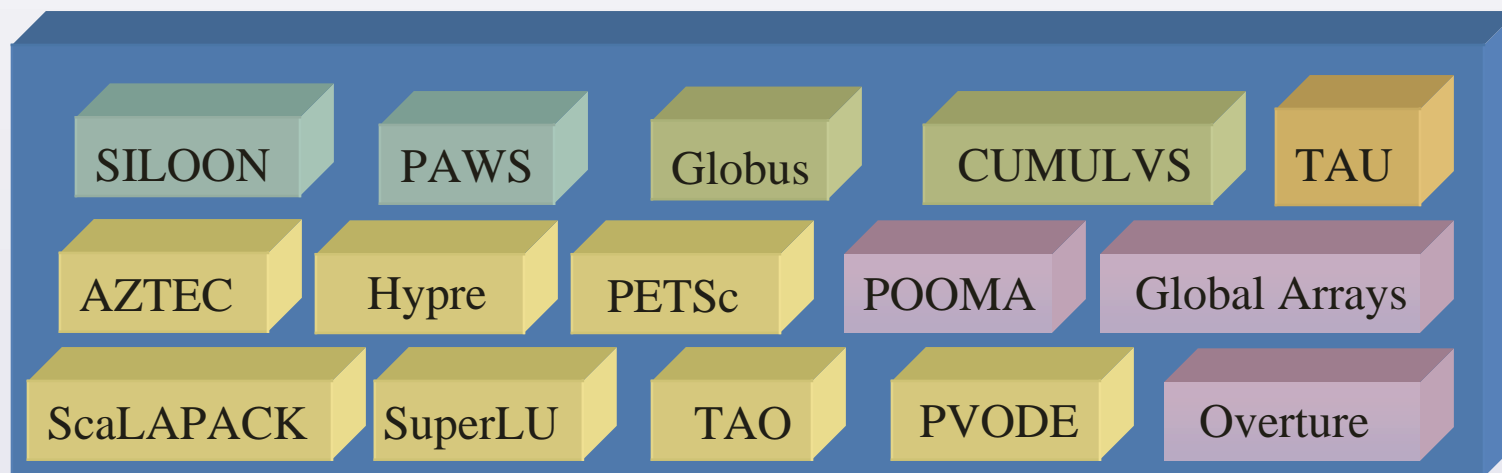
Educational Outreach

$$Ax = b$$

$$Az = \lambda z$$

View_field(T1)

$$A = U\Sigma V^T$$





PyACTS

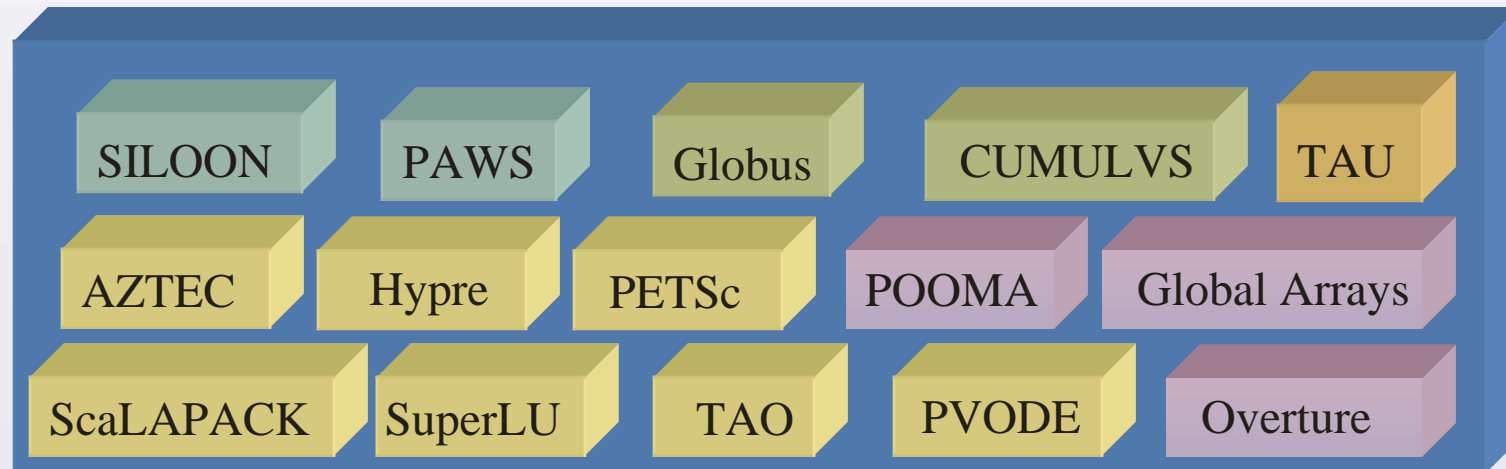


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Scientific Applications



- **PyClimate**: provides several services currently for analysis of climate variability (J. Saenz, University of the Basque Country)
- Code developers: Fortran, C, C++





Interoperability Issues

<http://acts.nersc.gov>



Q1. Where is the starting point for developers of scientific and engineering applications?

Q2. A message for other tool developers:
What has worked?, what hasn't?

Q3. How does interoperability affects performance?